

The invention relates to a method for operating an information center in a telecommunication network, and to an arrangement for carrying out the inventive method.

Please delete the heading beginning at line 4 of page 1 in its entirety.

Please delete the paragraph beginning at line 6 of page 1 in its entirety.

Please replace the heading beginning at line 25 of page 1 with the following rewritten heading:

BACKGROUND OF THE INVENTION

Please replace the consecutive paragraphs beginning at line 27 of page 1 with the following rewritten paragraphs:

Information centers have the task of providing call number information and, if necessary, setting up the connection to the subscriber required by the caller. In addition, these centers normally provide a multiplicity of additional services, including, by way of example, the connection of telephone conference calls, simultaneous translation or monitoring of the length of a call. The functionality of such an information center is also described by the term "Call Center".

The use of a mainframe pursues the objective, firstly, of collecting the status reports from the connected information desks, such as "free" or "busy", storing them centrally and, on the basis of this information, connecting an incoming call to an information desk using the exchange. Secondly, they provide processes and data which need to be available centrally in order to satisfy the demands placed on such an information center, and of permitting connection to external data networks. A mainframe having the aforementioned properties is also known by the term "Computer Telephone Integration Server", or "CTI Server" for short.

Please replace the consecutive paragraphs beginning at line 28 of page 2 with the following rewritten paragraphs:

U.S. Patent No. 5,848,143 entitled "Communications system using a central controller to control at least one network and agent system" dated March 4, 1996 discloses that it is possible to increase the resistance to failure of an information center by using a "primary central controller" and a "redundant central controller" of identical design thereto. In this context, a central controller performs typical tasks of an information center, for example generating control signals for distributing the calls to the information desks, and requesting status and utilization level of an information desk. The primary central controller and the redundant central controller are connected to one another via a data line which is used to interchange "heartbeat messages". If, by way of example, the primary central controller fails, this message, reception of which in the redundant central controller is regularly checked, is no longer sent. If a connection from the redundant central controller to the primary central controller using a path other than the aforementioned data line is not possible to set up, it is assumed that the primary central controller has failed. The tasks of the primary central controller are therefore performed by the redundant central controller until the primary central controller is operational again.

On the basis of the prior art, reducing to failure is achieved by duplicating the components in question, with the reduction to failure being greater the more components there are available in duplicate. A drawback, however, is that this solution is associated with a comparatively high level of technical complexity.

Page 3, between lines 24 and 25, please insert the following heading and paragraph:

SUMMARY OF THE INVENTION

The invention relates to a method for operating an information center in a telecommunication network, where, the information center is connected to an exchange, the information center comprises both a mainframe and at least one information desk having at least one telecommunication terminal, the mainframe is connected to the exchange, the information desk is connected to the exchange and to the mainframe via data transfer devices, and the basic function of distributing the incoming calls and setting up a voice link to a telecommunication terminal on the information desk is incorporated in the exchange.

The invention also relates to an arrangement for carrying out the inventive method.

Please replace the paragraph beginning at line 25 of page 3 with the following rewritten paragraph:

The invention discloses a method for operating an information center of the type mentioned in the introduction in which the cited drawbacks do not arise.

Please delete the heading at line 30 of page 3 in its entirety.

Please replace the consecutive paragraphs beginning at line 32 of page 3 with the following rewritten paragraphs:

In one embodiment of the invention, there is a method for operating an information center. The method includes, for example, the exchange continuously checks the ready status of the mainframe and of the telecommunication terminals, including the communication links thereto, and detects any fault arising, the mainframe continuously checks the ready status of the telecommunication terminals, including the data transfer path thereto, detects any fault arising and reports this to the exchange, and if the information desks cannot be reached via

the mainframe, the exchange at least performs call distribution and sets up a voice link to a telecommunication terminal on the information desk.

In one advantageous embodiment of the invention, during fault-free operation, the distribution of calls to the information desks is performed on the mainframe, and at least status reports from the units connected to the exchange are processed within the latter. During fault-free operation of the information center, the exchange thus has comparatively little loading.

Please replace the consecutive paragraphs beginning at line 31 of page 4 with the following rewritten paragraphs:

In one advantageous embodiment of the invention, if a telecommunication terminal on the information desk cannot be reached, at least call distribution and the setup of a voice link to another, ready telecommunication terminal on the same information desk are performed. Duplication of the telecommunication terminals and of the transfer paths to the exchange significantly increases the resistance to failure of the information center.

In another embodiment of the invention, there is an arrangement. The arrangement includes, for example, an information center connected to an exchange, in which the information center comprises both a mainframe and at least one information desk having at least one telecommunication terminal, in which the mainframe is connected to the exchange, in which the information desk is connected to the exchange and to the mainframe via data transfer devices, in which distribution of incoming calls and setting up a voice link to a telecommunication terminal on the information desk is incorporated in the exchange, in which the exchange comprises a device to continuously check the ready status of the mainframe and of the telecommunication terminals, including the communication links thereto, and also a device to detect any fault arising, in which the mainframe comprises a device to continuously

check the ready status of the telecommunication terminals, including the data transfer path thereto, and a device to detect a fault arising and a device to report this fault to the exchange, and in which the exchange comprises a device for call distribution and for setting up a voice link to a telecommunication terminal on the information desk if the information desks cannot be reached via the mainframe.

In one advantageous embodiment of the invention, the telecommunication terminal provided on the information desk is a personal computer equipped with a device for voice input and voice output, and a device for connection to the telecommunication network and for data transfer to the mainframe. The device provided for voice input may be, by way of example, a microphone, and the device provided for voice output may be headphones. For connection to the telecommunication network and to the data network, plug-in cards are used, for example, which permit the data to be converted into a serial data format in line with the respective transfer protocol. The simultaneous connection to a telecommunication network and a computer data network makes it possible to meet the demands placed on the telecommunication terminal in a particularly user-friendly manner. In addition, if the data transfer path to the mainframe fails, restricted operation can be maintained. In this context, the functionality during restricted operation depends on which data and processes are incorporated locally in the personal computer on the information desk. In the course of the disclosure, it may be pointed out that the increasing integration of voice data into the computer data networks means that there is not an absolute need for there to be a difference between the data protocols of the telecommunication network and of the data network for the mainframe. This merging is also known by the term "Voice over Internet Protocol".

It is advantageous if the information desk comprises a telephone and a personal computer having the aforementioned properties. In addition to the advantages already cited, the full functionality of the information desk is maintained even if one of the two

telecommunication terminals cannot be reached. Besides this, emergency operation can be maintained even in the event of total failure of the personal computer, for example on account of a power failure, since the telephone is supplied with the required power by the exchange.

Please replace the heading beginning at line 10 of page 7 with the following rewritten heading:

BRIEF DESCRIPTION OF THE DRAWINGS

Please replace the paragraph beginning line 12 of page 7 with the following rewritten paragraph:

The invention is explained in more detail with reference to Figure 1, which shows an exemplary arrangement of the elements of an information center.

Please replace the paragraph beginning line 12 of page 7 with the following rewritten paragraph:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please replace the consecutive paragraphs beginning at line 18 of page 7 with the following rewritten paragraphs:

The information center CC shown in the figure comprises a mainframe CTI and a plurality of information desks AP1 to APn which are of identical design and each comprise a telephone TEL and a personal computer PC. In the exemplary embodiment, both the telephones TEL1 to TELn and the personal computers PC1 to PCn are connected to the exchange VST via ISDN basic accesses, although analog connecting lines may also be used. The personal computers PC1 to PCn are additionally connected to the mainframe CTI via data

lines combined in a bus structure. The mainframe CTI is likewise connected to the exchange VST via a data line.

Referring to the information center in Figure 1, normal operation and restricted modes of operation, caused by failure of at least one element of the information center, are explained: During normal operation, an incoming call is reported by a program running in the exchange VST, the "call distribution program", to the program running on the mainframe CTI, the central program. Using the information available on the mainframe CTI, which information also includes the states "free" and "busy" for the information desks AP1 to APn, the central program determines to which information desk AP1 to APn the call will be forwarded. In addition, the mainframe CTI is also used to provide the data and processes needed for full operation of the information center CC, and also the connection to external service providers. The staff at the relevant information desk AP can now use the personal computer PC to provide the service they require. The status reports from the information desks AP1 to APn are continuously recorded both by the central program and by the call distribution program. Apart from collection and storage of these status reports, the call distribution program has no other tasks during normal operation.

If the mainframe CTI or a line connected thereto fails, this is detected by the call distribution program. The call distribution program then performs a call distribution required for an information center CC, and connects incoming calls to the telephone TEL or to the personal computer PC on the respective information desk AP. When normal operation can be resumed following repair of the damage, an appropriate report is sent by the central program to the call distribution program. The call distribution program then limits functionality to the extent provided during normal operation.

If a telephone TEL, or its line connected to the exchange VST, on an information desk AP fails, the full functionality of the information center CC is maintained. The same applies